

The importance of the gear transmission system and its wide use in machinery lead to the development of employing condition monitoring techniques. The condition monitoring has the capability to detect and diagnose the abnormal working condition of the gearbox at early stages. The early diagnoses could help to arrange and schedule maintenance strategy, and maintain the availability and productivity of the machinery. The failure of gears in factories at an unexpected time leads to huge financial losses. Therefore, in this study, the development of a gearbox conditions (three-stage helical gear) was presented in the cement plant by monitoring and examining it at certain intervals to determine the necessary maintenance times and to prevent failure. The gearbox produces a vibration signal that is rich in information of its operating condition. Thus, condition monitoring based on vibration analysis has become an effective technique to detect faults in gearbox and provide valued economic benefits by reducing the high maintenance cost. The analysis of gearbox vibration signal has been performed based on short-time Fourier transform method. The experimental results showed that there is an increase in the vibration amplitude every five months, which gives an indication of a defect that is most likely tooth wear.